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Hepatitis C virus dendritic cell-based immunotherapy: Investigation of the Immunomodulatory effect of Berberis vulgaris on core-pulsed dendritic cell vaccine

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Virus-induced dendritic cells (DCs) functional deficiency leads to sub-optimal initiation of adaptive immune responses and finally to chronic infection establishment. Because vaccination strategies to induce strong T-cell responses against hepatitis C virus are of great importance, we propose an advanced HCV vaccine based on *in vivo* enriching DCs with *Berberis vulgaris* ethanolic crude extract (BEC), then immunizing mice with these enriched DCs after pulsing them with HCV core protein. DCs were enriched by BEC intravenous injection in BALB/c mice. Enriched splenic CD11c+ populations were ex vivo pulsed with HCV core protein, then subcutaneously injected into another BALB/c model for immunization. Vaccine efficiency was assessed by flow cytometric analysis of splenocytes of immunized mice, cytokine profiling, cytotoxic T-lymphocyte assay, and humoral immune response assessment. Results showed that BEC raised CD11c+ population by 16.3% when compared to negative control. Relative to mice injected with RPMI-1640 medium, there was no significant difference in surface phenotypic characterization of splenocytes from mice immunized with non-BEC-enriched-core-pulsed DCs. However, splenocytes from mice immunized with BEC-enriched-core-pulsed DCs showed 197% increase in CD16+ population, 33% increase in MHCII+ population, and 43% decrease in CD3+ population. Also 57.9% greater anti-core cytotoxic T lymphocyte activity and up-regulation in interferon gamma and interleukin (IL) -12 expressions, while down-regulation in IL-4 and IL-10 were detected at the same group. Moreover, sustained specific anti-core antibodies were detected only in sera of the same group. In conclusion, our results indicate that BEC-enriched-core-transduced DCs may serve as a new model for immunotherapy of HCV chronic infection

Biography

Eiman Hassan Elwakeel is a M.Sc. student at Faculty of Science, Alexandria University. She is a clinical analyst and an assistant researcher at a project about Hepatitis C virus immunotherapy under supervision of Ass. Prof. Doaa Ahmad Ghareeb, at Biochemistry Department, Faculty of Science, Alexandria University

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